CALCAREOUS NANNOFOSSILS SURVIVORSHIP AT THE ONSET OF THE MESSINIAN SALINITY CRISIS

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CALCAREOUS NANNOFOSSILS SURVIVORSHIP AT THE ONSET OF THE MESSINIAN SALINITY CRISIS

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The Messinian salinity crisis is a short lived (5.97-5.33 Ma) dramatic paleo-oceanographic event occurred in the Mediterranean area; it is linked to the restriction of hydrological connection between the Mediterranean sea and the Atlantic ocean. Its main evidence in the geological record is a thick evaporite sequence cropping out onshore and recorded in deep sea cores and seismic lines; these deposits witness extreme condition in the water column and at the sea bottom during the crisis and are a good record of past extreme events impacting the biosphere. Despite more than fourty years of intense researches, both on shore and in the deep sea, the structure of the upper water column and life condition at the synchronous onset of gypsum deposition across the basin are far from being fully understood.

The occurrence of sedimentary sequences recording the lower cycles of the first phase of the crisis (tens to hundreds of kyrs) in non evaporitic sediments allowed us to recognize that the photic zone was inhabited even during the salinity crisis; calcareous plankton underwent dramatic reduction in size, diversity, and abundance; conversely, siliceous plankton bloomed. At the sea bottom sulphate oxidizing bacteria flourished. Moreover, fish remains are widespread all over the record, testifying the presence of a well developed food chain despite the chemico-physical changes occurred in the basin at the beginning of the crisis.

We present data showing the development, at onset of the crisis, of oligotypic calcareous nannofossil (CN) assemblages dominated by opportunistic taxa able to thrive in meso to eutrophic environments such as *H. carteri* and *R. minuta*. The occurrence of high nutrient supply across the onset of the crisis is also recorded by microbial blooms, both in the water column and at the sea floor, and by the widespread occurrence of diatomaceous sediments. Other taxa now extinct (*S. abies*, *U. rotula* and *Rhabdhosphaera* spp.) are also very abundant. In contrast, these taxa are believed to show warm and oligotrophic waters. Thus additional chemico-physical parameters, other than Temperature and Nutrient availability, must have driven the CN assemblage composition, suggesting that survivorship was limited to genera adapted to sudden photic zone changes, as also reported for other past geological transitions.

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